

**BLADDER-BASED CUFF FOR MEASURING PHYSIOLOGICAL  
PARAMETERS**

## Abstract of the Invention

A cuff for measuring volume and change in volume of a body appendage includes a hollow, rigid tube having an inner surface; and a bladder having an inner surface and an outer surface, the ends of the bladder being sealed to the ends of the tube to create an enclosed internal volume between the inner surface of the bladder and the inner surface of the tube and an external volume defined by the outer surface of the bladder and surrounded by the internal volume, the bladder having a normal, relaxed state, in which the internal volume is filled with a fluid and a retracted state in which the fluid is evacuated from the internal volume. Two stiffener ribs placed on the inner surface of the bladder, parallel to each other and to the lengthwise axis of the tube at diametrically opposite positions. A plurality of emitters and detectors arranged in a linear array are embedded in one of the ribs, so as to emit and detect light through the bladder. A fluid port extending through the tube and communicating with the internal volume, through which the internal volume can be filled with or emptied of the fluid.